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AMENDMENTS TO THE CLAIMS

Claims 1-44 (canceled)

45. (new) A method for treating a disease associated with a deleterious immune response comprising administering to a patient in need of such treatment a therapeutically effective amount of a polyhydroxylated pyrrolizidine compound of formula:

wherein R is selected from the group comprising hydrogen, straight or branched, unsubstituted or substituted, saturated or unsaturated acyl, alkyl, alkenyl, alkynyl and aryl groups, or a pharmaceutically acceptable salt or acyl derivative thereof.

46. (new) A method according to claim 45 wherein the pyrrolizidine compound has the formula:

wherein R is selected from the group comprising hydrogen, straight or branched, unsubstituted or substituted, saturated or unsaturated acyl, alkyl, alkenyl, alkynyl and aryl groups, or a pharmaceutically acceptable salt or acyl derivative thereof.

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47. (new) A method according to claim 45 wherein the pyrrolizidine compound is a glycosidase inhibitor.

- 48. (new) A method according to claim 45 wherein the pyrrolizidine compound, when administered *in vivo*, modifies one or more of:
 - (a) tumour cell glycosylation;
 - (b) viral protein glycosylation;
 - (c) cell-surface protein glycosylation;
 - (d) bacterial cell walls and
 - (e) cytokine release activity, by stimulation of secretion of one or more cytokine.
- 49. (new) A method according to claim 45 wherein the pyrrolizidine compound is an acyl derivative.
- 50. (new) A method according to claim 49 wherein the pyrrolizidine acyl derivative is chosen from a peracylated derivative, a derivative that is acylated at C-3 hydroxymethyl; a derivative that is acylated at C-6; and a derivative that is acylated at C-3 hydroxymethyl and C-6.
- 51. (new) A method according to claim 49 wherein the acyl derivative is an alkanoyl derivative selected from acetyl, propanoyl and butanoyl.
- 52. (new) A method according to claim 45 wherein R is a saccharide moiety.
- 53. (new) A method according to claim 52 wherein the saccharide moiety is a glucoside or arabinoside moiety.

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- 54. (new) A method according to claim 45 wherein the pyrrolizidine compound is chosen from:
- (a) 1R,2R,3R,6S,7S,7aR)-3-(hydroxymethyl)-1,2,6,7-tetrahydroxypyrrolizidine (casuarine), wherein R is hydrogen and having the formula:

- (b) a casuarine glycoside;
- (c) casuarine-6- α -D-glucoside of the formula:

- (d) 6-O-butanoylcasuarine;
- (e) 3,7-diepi-casuarine;
- (f) 7-epi-casuarine;
- (g) 3,6,7-triepi-casuarine;
- (h) 6,7-diepi-casuarine;
- (i) 3-epi-casuarine;
- (j) 3,7-diepi-casuarine-6-α-D-glucoside;
- (k) 7-epi-casuarine-6-α-D-glucoside;
- (l) 3,6,7-triepi-casuarine-6-α-D-glucoside;
- (m)6,7-diepi-casuarine-6-α-D-glucoside;
- (n) 3-epi-casuarine-6-α-D-glucoside, and

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a pharmaceutically acceptable salt or derivative of any of (a) - (n).

55. (new) A method according to claim 45 wherein said polyhydroxylated pyrrolizidine compound is administered in combination with an additional therapeutic agent chosen from one or more of:

- (a) an immunostimulant;
- (b) a cytotoxic agent;
- (c) an antimicrobial agent;
- (d) an antiviral agent; and
- (e) a primed dendritic cell.

56. (new) A method according to claim 46 wherein said disease is chosen from

- (a) a proliferative disorder;
- (b) a Th1-related disease or disorder;
- (c) a Th2-related disease or disorder;
- (d) a bacterial infection;
- (e) a viral infection;
- (f) a prion, fungal, protozoan or metazoan infection; and
- (g) a disease associated with an intracellular pathogen.

57. (new) A method according to claim 56 wherein said viral infection is selected from respiratory syncytial virus (RSV), hepatitis B virus (HBV), Epstein-Barr, hepatitis C virus (HCV), herpes simplex type 1 and 2, herpes genitalis, herpes keratitis, herpes encephalitis, herpes zoster, human immunodeficiency virus (HIV), influenza A virus, hantann virus (hemorrhagic fever), human papilloma virus (HPV) and measles.

58. (new) A method for immunomodulation comprising administering to a patient in need of

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such treatment a composition containing a therapeutically effective amount of a a polyhydroxylated pyrrolizidine compound of formula:

wherein R is selected from the group comprising hydrogen, straight or branched, unsubstituted or substituted, saturated or unsaturated acyl, alkyl, alkenyl, alkynyl and aryl groups, or a pharmaceutically acceptable salt or acyl derivative thereof.

- 59. (new) The method of claim 58 wherein said composition comprises a herbal medicine.
- 60. (new) A method according to claim 59 wherein said herbal medicine derives from one or more plant species sources selected from:
 - (a) a member of the taxon Myrtaceae
 - (b) a member of the taxon Casuarinaceae;
 - (c) a combination of two or more plant species selected from both of the taxons of (a) and (b).
- 61. (new) A method according to claim 58 wherein the Th1:Th2 response ratio is increased.
- 62. (new) A method for immunomodulation according to claim 58 chosen from
 - (a) haemorestoration;
 - (b) haemoablative immunotherapy;
 - (c) alleviation of immunosuppression;
 - (d) cytokine stimulation;

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(e) vaccination, wherein the pyrrolizidine compound acts as an adjuvant;

- (f) vaccination with a dendritic cell vaccine wherein the dendritic cells are contacted with the pyrrolizidine compound;
- (g) administration of dendritic cells in the treatment or prophylaxis of autoimmune disorders, wherein the dendritic cells are contacted with the pyrrolizidine compound;
- (h) wound healing;
- (i) stimulating the innate immune response;
- (j) boosting the activity of endogenous NK cells;
- (k) inducing, potentiating or activating one or more cytokines in vivo; and
- (l) providing chemoprotection to a patient undergoing chemotherapy.

63. (new) A vaccine comprising

(1) a polyhydroxylated pyrrolizidine compound of formula:

wherein R is selected from the group comprising hydrogen, straight or branched, unsubstituted or substituted, saturated or unsaturated acyl, alkyl, alkenyl, alkynyl and aryl groups;

in combination with

(2) an antigen,

said pyrrolizidine compound being present in an amount sufficient to produce an adjuvant effect on vaccination.